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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------|------------------------|
| 10/533,651 | 05/05/2005 | Kesatoshi Takeuchi | 9319T-1174/NP | 9567 |
| 27572 7590 11/16/2007 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303 | | | EXAMINER LE, DANG D | |
| | | | ART UNIT 2834 | PAPER NUMBER |
| | | | MAIL DATE 11/16/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/533,651 | Applicant(s) TAKEUCHI, KESATOSHI | |
| | Examiner Dang D. Le | Art Unit 2834 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-7,9-11,13-18,21,23,26 and 31-39 is/are pending in the application.
- 4a) Of the above claim(s) 14 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-7,9-11,13,15-17,21,23,26 and 31-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>5/5/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 1, 5-7, 9-11, 13, 15-17, 21, 23, 26-26, 31-39 in the reply filed on 8/22/07 is acknowledged. The traversal is on the ground(s) that an undue burden would not be placed upon the examiner. This is not found persuasive because the search for one species is not required by the other.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 14 and 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/22/07.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 7, 9, 13, 16, 17, 21, 26-28, and 36-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (6,011,337).

Regarding claim 1, Lin et al. shows a magnetic structure comprising a first magnetic bodies and a second magnetic body (3 and 4), and a third magnetic body (2)

disposed therebetween and relatively movable in a prescribed direction in relation to said first and second magnetic bodies,

wherein said first magnetic body and second magnetic body respectively comprise a structure in which a plurality of electromagnetic coils (42) capable of being alternately excited to opposite polarities is disposed in order; said third magnetic body comprises a structure in which permanent magnets (21) alternately magnetized to opposite polarities are disposed in order; and said first magnetic body and said second magnetic body are structured such that an electromagnetic coil of said first magnetic body and an electromagnetic coil of said second magnetic body are disposed so as to mutually possess an array pitch difference (90 degrees, Figures 5-8),

said magnetic structure further comprising a coil exciting circuit (with sensors 39, 49) for supplying an exciting current, consisting of frequency signals having different phases (two phases), to the electromagnetic coils of said first and second magnetic bodies

wherein the pair formed from said first and second magnetic bodies and one side of said third magnetic body form a rotor (2), and the pair formed from said first and second magnetic bodies and the other side of said third magnetic body form a stator (3 and 4), and

wherein said coil exciting circuit controls excitation of the electromagnetic coils of said first and second magnetic body via the exciting current supplied to the electromagnetic coils, the phase of the current being corrected based on a rotational speed of said rotor (through sensors 39, 49).

Regarding claim 5, Lin et al. also shows said first magnetic body, second magnetic body and third magnetic body being respectively formed in a circular arc (Figure 2).

Regarding claim 7, Lin et al. also shows said first magnetic body and second magnetic body being disposed at an equidistance, and said third magnetic body is disposed between said first magnetic body and second magnetic body.

Regarding claim 9, Lin et al. also shows a rotational speed detection means (39, 49) of said rotor.

Regarding claim 13, Lin et al. also shows the pair formed from said first and second magnetic bodies and one side of said third magnetic body form a slider (so called for sliding around the bearing 12), and the pair formed from said first and second magnetic bodies and the other side of said third magnetic body form a stator.

Regarding claim 16, Lin et al. also shows a plurality of pairs formed from said stator and rotor is connected serially or in parallel.

Regarding claim 17, Lin et al. also shows the motor as a drive source.

Regarding claim 21, Lin et al. also shows a third magnetic body (2) being interpositioned between a first magnetic body and a second magnetic body (3 and 4), the respective magnetic bodies comprise a plurality of magnetic units capable of being alternately magnetized to opposite poles (Figures 5-8), and said first magnetic body and second magnetic body, and said third magnetic body may be moved relatively by periodically changing the magnetic pattern pertaining to the magnetic unit of at least one

magnetic body, wherein the magnetic circuit in relation to said magnetic body is structured in an open loop (Figures 5-8).

Regarding claim 26, Lin et al. also shows every exciting coil being constantly excited during the start-up rotation (2π) in relation to the two-phase exciting coil (Figure 5).

Regarding claim 27, Lin et al. also shows the duty ratio of the signal to be supplied from said exciting circuit means to the electromagnetic coil of said first and/or second magnetic body is made to change (from Figure 5 to Figure 8).

Regarding claim 28, Lin et al. also shows said duty ratio being determined in accordance with the driving state of the load driven with said magnetic structure (through sensors 39, 49).

Regarding claim 36, Lin et al. also shows a magnetic drive-power generation mechanism for rotating a rotor in relation to a stator by utilizing the attraction and repulsion between the electromagnetic coil and permanent magnet, wherein the magnetic field is formed parallel to the rotating direction of the rotor (Figure 5-8).

Regarding claim 37, Lin et al. also shows said stator and rotor being formed in a disc shape (Figure 2).

Regarding claim 38, Lin et al. also shows a magnetic body formed such that a plurality of electromagnetic coils or permanent magnets is alternately disposed so as to be opposite poles on a disc (Figures 2 and 5-8).

Regarding claim 39, Lin et al. also shows said disc (3 and 4) being formed from a nonmagnetic material.

5. Claims 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (6,005,320).

Regarding claim 34, Kim et al. shows a magnetic drive mechanism, comprising an electromagnetic coil (5b1) having formed thereon a nonmagnetic conductive pattern and a permanent magnet (1a1); means for supplying exciting current to said electromagnetic coil (Figure 6) and switching means (Figure 10); for switching the attraction and repulsion between said electromagnetic coil and permanent magnet.

Regarding claim 35, Kim et al. also shows a magnetic field in the horizontal direction being formed in said electromagnetic coil and permanent magnet (magnetic field being in 3-D).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Karita et al. (4,868,431).

Regarding claim 6, Lin et al. shows all of the limitations of the claimed invention except for said first magnetic body, second magnetic body and third magnetic body being respectively formed in a straight line.

Karita et al. shows said first magnetic body, second magnetic body and third magnetic body being respectively formed in a straight line for the purpose of making a linear motor.

Since Lin et al. and Karita et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form said first magnetic body, second magnetic body and third magnetic body in a straight line as taught by Karita et al. for the purpose discussed above.

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Tanase et al. (6,327,232).

Regarding claim 10, Lin et al. shows all of the limitations of the claimed invention except for said exciting circuit means comprises reference pulse signal generation means; and phase correction means for correcting the phase of the exciting current to be supplied to the electromagnetic coil of said first magnetic body and the electromagnetic coil of said second magnetic body based on said rotational speed detection signal and said reference pulse signal.

Tanase et al. shows said exciting circuit means comprises reference pulse signal generation means (33); and phase correction means (45) for correcting the phase of the exciting current to be supplied to the electromagnetic coil of said first magnetic body and the electromagnetic coil of said second magnetic body based on said rotational

speed detection signal and said reference pulse signal for the purpose of controlling the motor operation.

Since Lin et al. and Karita et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to add reference pulse signal generation means; and phase correction means as taught by Tanase et al. for the purpose discussed above.

Regarding claim 11, Lin et al. inherently shows buffer means (Figures 5-8) for controlling the exciting direction of said electromagnetic coil at a prescribed duty ratio upon the phase-corrected exciting current being supplied thereto.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Caamono (6,049,197).

Regarding claim 15, Lin et al. shows all of the limitations of the claimed invention except for said rotor being connected to a rotating body, and functions as a power generator.

Caamono shows said rotor (24) being connected to a rotating body, and functions as a power generator for the purpose of creating electricity.

Since Lin et al. and Caamono are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to connect said rotor to a rotating body, and functions as a power generator as taught by Caamono for the purpose discussed above.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Brugger (3,290,787).

Regarding claim 23, Lin et al. shows all of the limitations of the claimed invention except for said exciting circuit comprises a start-up control unit for generating a reference wave pulse and forming an exciting signal to be supplied to said magnetic body from said reference wave pulse in order to start-up said first and/or second magnetic body; and a sensor follow-up control unit for forming an exciting signal to be supplied to said magnetic body by following the output from the rotational position sensor of said magnetic body after the start-up of said magnetic body.

Brugger shows a start-up control unit and a sensor follow-up control unit for the purpose of controlling the operation of the motor.

Since Lin et al. and Brugger are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to add a start-up control unit and a sensor follow-up control unit as taught by Brugger for the purpose discussed above.

11. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Kim et al. (6,005,320).

Regarding claims 31 and 33, Lin et al. shows all of the limitations of the claimed invention except for said first and second magnetic structures being structured from an electromagnetic coil formed in a coil shape by winding a conducting sleeve around a nonmagnetic bobbin.

Kim et al. shows a said first and second magnetic structures being structured from an electromagnetic coil formed in a coil shape by winding a conducting sleeve around a nonmagnetic bobbin (5b1) for the purpose of reducing weight.

Since Lin et al. and Kim et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use bobbin without iron core as taught by Kim et al. for the purpose discussed above.

Regarding claim 32, Lin et al. also shows a magnetic body being driven via switching of attraction and repulsion between third magnetic bodies formed from said electromagnetic coil and a permanent magnet.

Information on How to Contact USPTO

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D. Le whose telephone number is (571) 272-2027. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone

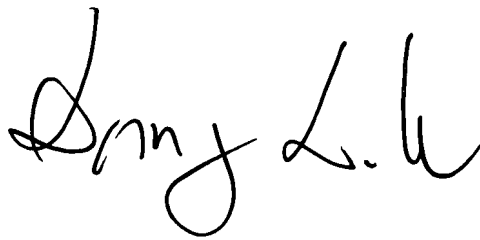
Application/Control Number:
10/533,651
Art Unit: 2834

Page 11

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/12/07

A handwritten signature in black ink, appearing to read 'Dong Le', with a stylized flourish at the end.

DANG LE
PRIMARY EXAMINER